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  4 <110> APPLICANT: De Vries, Gerald W.
  6 <120> TITLE OF INVENTION: Methods of Extending Corneal Graft
  7       Survival
  9 <130> FILE REFERENCE: P-AR 4951
C--> 11 <140> CURRENT APPLICATION NUMBER: US/10/081,126
C--> 11 <141> CURRENT FILING DATE: 2002-02-22
 11 <160> NUMBER OF SEQ ID NOS: 7
 13 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 15 <210> SEQ ID NO: 1
 16 <211> LENGTH: 4113
 17 <212> TYPE: DNA
 18 <213> ORGANISM: Homo sapiens
 20 <220> FEATURE:
 21 <221> NAME/KEY: CDS
 22 <222> LOCATION: (22)...(4110)
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 26                         Met Gln Arg Gly Ala Ala Leu Cys Leu Arg
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 29 ctg tgg ctc tgc ctg gga ctc ctg gac ggc ctg gtg agt gac tac tcc      99
 30 Leu Trp Leu Cys Leu Gly Leu Leu Asp Gly Leu Val Ser Asp Tyr Ser
 31              15                  20                  25
 33 atg acc ccc ccg acc ttg aac atc acg gag gag tca cac gtc atc gac     147
 34 Met Thr Pro Pro Thr Leu Asn Ile Thr Glu Glu Ser His Val Ile Asp
 35              30                  35                  40
 37 acc ggt gac agc ctg tcc atc tcc tgc agg gga cag cac ccc ctc gag     195
 38 Thr Gly Asp Ser Leu Ser Ile Ser Cys Arg Gly Gln His Pro Leu Glu
 39              45                  50                  55
 41 tgg gct tgg cca gga gct cag gag gcg cca gcc acc gga gac aag gac     243
 42 Trp Ala Trp Pro Gly Ala Gln Glu Ala Pro Ala Thr Gly Asp Lys Asp
 43          60                  65                  70
 45 agc gag gac acg ggg gtg gtg cga gac tgc gag ggc aca gac gcc agg     291
 46 Ser Glu Asp Thr Gly Val Val Arg Asp Cys Glu Gly Thr Asp Ala Arg
 47 75                  80                  85                  90
 49 ccc tac tgc aag gtg ttg ctg ctg cac gag gta cat gcc aac gac aca     339
 50 Pro Tyr Cys Lys Val Leu Leu Leu His Glu Val His Ala Asn Asp Thr
 51              95                 100                 105
 53 ggc agc tac gtc tgc tac tac aag tac atc aag gca cgc atc gag ggc     387
 54 Gly Ser Tyr Val Cys Tyr Tyr Lys Tyr Ile Lys Ala Arg Ile Glu Gly
 55             110                 115                 120
 57 acc acg gcc gcc agc tcc tac gtg ttc gtg aga gac ttt gag cag cca     435
 58 Thr Thr Ala Ala Ser Ser Tyr Val Phe Val Arg Asp Phe Glu Gln Pro
 59             125                 130                 135
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Input Set : A:\AR4951.txt
Output Set: N:\CRF3\03072002\J081126.raw

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61 ttc atc aac aag cct gac acg ctc ttg gtc aac agg aag gac gcc atg    483
62 Phe Ile Asn Lys Pro Asp Thr Leu Leu Val Asn Arg Lys Asp Ala Met
63      140             145             150
65 tgg gtg ccc tgt ctg gtg tcc atc ccc ggc ctc aat gtc acg ctg cgc    531
66 Trp Val Pro Cys Leu Val Ser Ile Pro Gly Leu Asn Val Thr Leu Arg
67 155             160             165             170
69 tcg caa agc tcg gtg ctg tgg cca gac ggg cag gag gtg gtg tgg gat    579
70 Ser Gln Ser Ser Val Leu Trp Pro Asp Gly Gln Glu Val Val Trp Asp
71             175             180             185
73 gac cgg cgg ggc atg ctc gtg tcc acg cca ctg ctg cac gat gcc ctg    627
74 Asp Arg Arg Gly Met Leu Val Ser Thr Pro Leu Leu His Asp Ala Leu
75             190             195             200
77 tac ctg cag tgc gag acc acc tgg gga gac cag gac ttc ctt tcc aac    675
78 Tyr Leu Gln Cys Glu Thr Thr Trp Gly Asp Gln Asp Phe Leu Ser Asn
79             205             210             215
81 ccc ttc ctg gtg cac atc aca ggc aac gag ctc tat gac atc cag ctg    723
82 Pro Phe Leu Val His Ile Thr Gly Asn Glu Leu Tyr Asp Ile Gln Leu
83      220             225             230
85 ttg ccc agg aag tcg ctg gag ctg ctg gta ggg gag aag ctg gtc ctc    771
86 Leu Pro Arg Lys Ser Leu Glu Leu Leu Val Gly Glu Lys Leu Val Leu
87 235             240             245             250
89 aac tgc acc gtg tgg gct gag ttt aac tca ggt gtc acc ttt gac tgg    819
90 Asn Cys Thr Val Trp Ala Glu Phe Asn Ser Gly Val Thr Phe Asp Trp
91             255             260             265
93 gac tac cca ggg aag cag gca gag cgg ggt aag tgg gtg ccc gag cga    867
94 Asp Tyr Pro Gly Lys Gln Ala Glu Arg Gly Lys Trp Val Pro Glu Arg
95             270             275             280
97 cgc tcc caa cag acc cac aca gaa ctc tcc agc atc ctg acc atc cac    915
98 Arg Ser Gln Gln Thr His Thr Glu Leu Ser Ser Ile Leu Thr Ile His
99      285             290             295
101 aac gtc agc cag cac gac ctg ggc tcg tat gtg tgc aag gcc aac aac    963
102 Asn Val Ser Gln His Asp Leu Gly Ser Tyr Val Cys Lys Ala Asn Asn
103     300             305             310
105 ggc atc cag cga ttt cgg gag agc acc gag gtc att gtg cat gaa aat   1011
106 Gly Ile Gln Arg Phe Arg Glu Ser Thr Glu Val Ile Val His Glu Asn
107 315             320             325             330
109 ccc ttc atc agc gtc gag tgg ctc aaa gga ccc atc ctg gag gcc acg   1059
110 Pro Phe Ile Ser Val Glu Trp Leu Lys Gly Pro Ile Leu Glu Ala Thr
111             335             340             345
113 gca gga gac gag ctg gtg aag ctg ccc gtg aag ctg gca gcg tac ccc   1107
114 Ala Gly Asp Glu Leu Val Lys Leu Pro Val Lys Leu Ala Ala Tyr Pro
115             350             355             360
117 ccg ccc gag ttc cag tgg tac aag gat gga aag gca ctg tcc ggg cgc   1155
118 Pro Pro Glu Phe Gln Trp Tyr Lys Asp Gly Lys Ala Leu Ser Gly Arg
119     365             370             375
121 cac agt cca cat gcc ctg gtg ctc aag gag gtg aca gag gcc agc aca   1203
122 His Ser Pro His Ala Leu Val Leu Lys Glu Val Thr Glu Ala Ser Thr
123     380             385             390
125 ggc acc tac acc ctc gcc ctg tgg aac tcc gct gct ggc ctg agg cgc   1251
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Input Set : A:\AR4951.txt
Output Set: N:\CRF3\03072002\J081126.raw

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126 Gly Thr Tyr Thr Leu Ala Leu Trp Asn Ser Ala Ala Gly Leu Arg Arg
127 395             400             405             410
129 aac atc agc ctg gag ctg gtg gtg aat gtg ccc ccc cag ata cat gag   1299
130 Asn Ile Ser Leu Glu Leu Val Val Asn Val Pro Pro Gln Ile His Glu
131             415             420             425
133 aag gag gcc tcc tcc ccc agc atc tac tcg cgt cac agc cgc cag gcc   1347
134 Lys Glu Ala Ser Ser Pro Ser Ile Tyr Ser Arg His Ser Arg Gln Ala
135             430             435             440
137 ctc acc tgc acg gcc tac ggg gtg ccc ctg cct ctc agc atc cag tgg   1395
138 Leu Thr Cys Thr Ala Tyr Gly Val Pro Leu Pro Leu Ser Ile Gln Trp
139             445             450             455
141 cac tgg cgg ccc tgg aca ccc tgc aag atg ttt gcc cag cgt agt ctc   1443
142 His Trp Arg Pro Trp Thr Pro Cys Lys Met Phe Ala Gln Arg Ser Leu
143     460             465             470
145 cgg cgg cgg cag cag caa gac ctc atg cca cag tgc cgt gac tgg agg   1491
146 Arg Arg Arg Gln Gln Gln Asp Leu Met Pro Gln Cys Arg Asp Trp Arg
147 475             480             485             490
149 gcg gtg acc acg cag gat gcc gtg aac ccc atc gag agc ctg gac acc   1539
150 Ala Val Thr Thr Gln Asp Ala Val Asn Pro Ile Glu Ser Leu Asp Thr
151             495             500             505
153 tgg acc gag ttt gtg gag gga aag aat aag act gtg agc aag ctg gtg   1587
154 Trp Thr Glu Phe Val Glu Gly Lys Asn Lys Thr Val Ser Lys Leu Val
155             510             515             520
157 atc cag aat gcc aac gtg tct gcc atg tac aag tgt gtg gtc tcc aac   1635
158 Ile Gln Asn Ala Asn Val Ser Ala Met Tyr Lys Cys Val Val Ser Asn
159             525             530             535
161 aag gtg ggc cag gat gag cgg ctc atc tac ttc tat gtg acc acc atc   1683
162 Lys Val Gly Gln Asp Glu Arg Leu Ile Tyr Phe Tyr Val Thr Thr Ile
163     540             545             550
165 ccc gac ggc ttc acc atc gaa tcc aag cca tcc gag gag cta cta gag   1731
166 Pro Asp Gly Phe Thr Ile Glu Ser Lys Pro Ser Glu Glu Leu Leu Glu
167 555             560             565             570
169 ggc cag ccg gtg ctc ctg agc tgc caa gcc gac agc tac aag tac gag   1779
170 Gly Gln Pro Val Leu Leu Ser Cys Gln Ala Asp Ser Tyr Lys Tyr Glu
171             575             580             585
173 cat ctg cgc tgg tac cgc ctc aac ctg tcc acg ctg cac gat gcg cac   1827
174 His Leu Arg Trp Tyr Arg Leu Asn Leu Ser Thr Leu His Asp Ala His
175     590             595             600
177 ggg aac ccg ctt ctg ctc gac tgc aag aac gtg cat ctg ttc gcc acc   1875
178 Gly Asn Pro Leu Leu Leu Asp Cys Lys Asn Val His Leu Phe Ala Thr
179             605             610             615
181 cct ctg gcc gcc agc ctg gag gag gtg gca cct ggg gcg cgc cac gcc   1923
182 Pro Leu Ala Ala Ser Leu Glu Glu Val Ala Pro Gly Ala Arg His Ala
183     620             625             630
185 acg ctc agc ctg agt atc ccc cgc gtc gcg ccc gag cac gag ggc cac   1971
186 Thr Leu Ser Leu Ser Ile Pro Arg Val Ala Pro Glu His Glu Gly His
187 635             640             645             650
189 tat gtg tgc gaa gtg caa gac cgg cgc agc cat gac aag cac tgc cac   2019
190 Tyr Val Cys Glu Val Gln Asp Arg Arg Ser His Asp Lys His Cys His
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Input Set : A:\AR4951.txt
Output Set: N:\CRF3\03072002\J081126.raw

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191               655              660              665
193 aag aag tac ctg tcg gtg cag gcc ctg gaa gcc cct cgg ctc acg cag  2067
194 Lys Lys Tyr Leu Ser Val Gln Ala Leu Glu Ala Pro Arg Leu Thr Gln
195               670              675              680
197 aac ttg acc gac ctc ctg gtg aac gtg agc gac tcg ctg gag atg cag  2115
198 Asn Leu Thr Asp Leu Leu Val Asn Val Ser Asp Ser Leu Glu Met Gln
199      685              690              695
201 tgc ttg gtg gcc gga gcg cac gcg ccc agc atc gtg tgg tac aaa gac  2163
202 Cys Leu Val Ala Gly Ala His Ala Pro Ser Ile Val Trp Tyr Lys Asp
203      700              705              710
205 gag agg ctg ctg gag gaa aag tct gga gtc gac ttg gcg gac tcc aac  2211
206 Glu Arg Leu Leu Glu Glu Lys Ser Gly Val Asp Leu Ala Asp Ser Asn
207 715              720              725              730
209 cag aag ctg agc atc cag cgc gtg cgc gag gag gat gcg gga ccg tat  2259
210 Gln Lys Leu Ser Ile Gln Arg Val Arg Glu Glu Asp Ala Gly Pro Tyr
211               735              740              745
213 ctg tgc agc gtg tgc aga ccc aag ggc tgc gtc aac tcc tcc gcc agc  2307
214 Leu Cys Ser Val Cys Arg Pro Lys Gly Cys Val Asn Ser Ser Ala Ser
215               750              755              760
217 gtg gcc gtg gaa ggc tcc gag gat aag ggc agc atg gag atc gtg atc  2355
218 Val Ala Val Glu Gly Ser Glu Asp Lys Gly Ser Met Glu Ile Val Ile
219               765              770              775
221 ctt gtc ggt acc ggc gtc atc gct gtc ttc ttc tgg gtc ctc ctc ctc  2403
222 Leu Val Gly Thr Gly Val Ile Ala Val Phe Phe Trp Val Leu Leu Leu
223      780              785              790
225 ctc atc ttc tgt aac atg agg agg ccg gcc cac gca gac atc aag acg  2451
226 Leu Ile Phe Cys Asn Met Arg Arg Pro Ala His Ala Asp Ile Lys Thr
227 795              800              805              810
229 ggc tac ctg tcc atc atc atg gac ccc ggg gag gtg cct ctg gag gag  2499
230 Gly Tyr Leu Ser Ile Ile Met Asp Pro Gly Glu Val Pro Leu Glu Glu
231               815              820              825
233 caa tgc gaa tac ctg tcc tac gat gcc agc cag tgg gaa ttc ccc cga  2547
234 Gln Cys Glu Tyr Leu Ser Tyr Asp Ala Ser Gln Trp Glu Phe Pro Arg
235               830              835              840
237 gag cgg ctg cac ctg ggg aga gtg ctc ggc tac ggc gcc ttc ggg aag  2595
238 Glu Arg Leu His Leu Gly Arg Val Leu Gly Tyr Gly Ala Phe Gly Lys
239      845              850              855
241 gtg gtg gaa gcc tcc gct ttc ggc atc cac aag ggc agc agc tgt gac  2643
242 Val Val Glu Ala Ser Ala Phe Gly Ile His Lys Gly Ser Ser Cys Asp
243      860              865              870
245 acc gtg gcc gtg aaa atg ctg aaa gag ggc gcc acg gcc agc gag cag  2691
246 Thr Val Ala Val Lys Met Leu Lys Glu Gly Ala Thr Ala Ser Glu Gln
247 875              880              885              890
249 cgc gcg ctg atg tcg gag ctc aag atc ctc att cac atc ggc aac cac  2739
250 Arg Ala Leu Met Ser Glu Leu Lys Ile Leu Ile His Ile Gly Asn His
251               895              900              905
253 ctc aac gtg gtc aac ctc ctc ggg gcg tgc acc aag ccg cag ggc ccc  2787
254 Leu Asn Val Val Asn Leu Leu Gly Ala Cys Thr Lys Pro Gln Gly Pro
255               910              915              920
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Input Set : A:\AR4951.txt
Output Set: N:\CRF3\03072002\J081126.raw

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258 Leu Met Val Ile Val Glu Phe Cys Lys Tyr Gly Asn Leu Ser Asn Phe
259         925             930             935
261 ctg cgc gcc aag cgg gac gcc ttc agc ccc tgc gcg gag aag tct ccc   2883
262 Leu Arg Ala Lys Arg Asp Ala Phe Ser Pro Cys Ala Glu Lys Ser Pro
263         940             945             950
265 gag cag cgc gga cgc ttc cgc gcc atg gtg gag ctc gcc agg ctg gat   2931
266 Glu Gln Arg Gly Arg Phe Arg Ala Met Val Glu Leu Ala Arg Leu Asp
267 955             960             965             970
269 cgg agg cgg ccg ggg agc agc gac agg gtc ctc ttc gcg cgg ttc tcg   2979
270 Arg Arg Arg Pro Gly Ser Ser Asp Arg Val Leu Phe Ala Arg Phe Ser
271         975             980             985
273 aag acc gag ggc gga gcg agg cgg gct tct cca gac caa gaa gct gag   3027
274 Lys Thr Glu Gly Gly Ala Arg Arg Ala Ser Pro Asp Gln Glu Ala Glu
275             990             995             1000
277 gac ctg tgg ctg agc ccg ctg acc atg gaa gat ctt gtc tgc tac agc   3075
278 Asp Leu Trp Leu Ser Pro Leu Thr Met Glu Asp Leu Val Cys Tyr Ser
279         1005            1010            1015
281 ttc cag gtg gcc aga ggg atg gag ttc ctg gct tcc cga aag tgc atc   3123
282 Phe Gln Val Ala Arg Gly Met Glu Phe Leu Ala Ser Arg Lys Cys Ile
283     1020            1025            1030
285 cac aga gac ctg gct gct cgg aac att ctg ctg tcg gaa agc gac gtg   3171
286 His Arg Asp Leu Ala Ala Arg Asn Ile Leu Leu Ser Glu Ser Asp Val
287 1035            1040            1045            1050
289 gtg aag atc tgt gac ttt ggc ctt gcc cgg gac atc tac aaa gac ccc   3219
290 Val Lys Ile Cys Asp Phe Gly Leu Ala Arg Asp Ile Tyr Lys Asp Pro
291             1055            1060            1065
293 gac tac gtc cgc aag ggc agt gcc cgg ctg ccc ctg aag tgg atg gcc   3267
294 Asp Tyr Val Arg Lys Gly Ser Ala Arg Leu Pro Leu Lys Trp Met Ala
295             1070            1075            1080
297 cct gaa agc atc ttc gac aag gtg tac acc acg cag agt gac gtg tgg   3315
298 Pro Glu Ser Ile Phe Asp Lys Val Tyr Thr Thr Gln Ser Asp Val Trp
299         1085            1090            1095
301 tcc ttt ggg gtg ctt ctc tgg gag atc ttc tct ctg ggg gcc tcc ccg   3363
302 Ser Phe Gly Val Leu Leu Trp Glu Ile Phe Ser Leu Gly Ala Ser Pro
303     1100            1105            1110
305 tac cct ggg gtg cag atc aat gag gag ttc tgc cag cgc gtg aga gac   3411
306 Tyr Pro Gly Val Gln Ile Asn Glu Glu Phe Cys Gln Arg Val Arg Asp
307 1115            1120            1125            1130
309 ggc aca agg atg agg gcc ccg gag ctg gcc act ccc gcc ata cgc cac   3459
310 Gly Thr Arg Met Arg Ala Pro Glu Leu Ala Thr Pro Ala Ile Arg His
311             1135            1140            1145
313 atc atg ctg aac tgc tgg tcc gga gac ccc aag gcg aga cct gca ttc   3507
314 Ile Met Leu Asn Cys Trp Ser Gly Asp Pro Lys Ala Arg Pro Ala Phe
315             1150            1155            1160
317 tcg gac ctg gtg gag atc ctg ggg gac ctg ctc cag ggc agg ggc ctg   3555
318 Ser Asp Leu Val Glu Ile Leu Gly Asp Leu Leu Gln Gly Arg Gly Leu
319         1165            1170            1175
321 caa gag gaa gag gag gtc tgc atg gcc ccg cgc agc tct cag agc tca   3603
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Input Set : **A:\AR4951.txt**
Output Set: **N:\CRF3\03072002\J081126.raw**

<u>Please Note:</u>
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:5; Xaa Pos. 2,3,4,5,6,7,8,9,10,11,13
Seq#:6; N Pos. 1,2,4,8,9,10,11,12,13
Seq#:7; N Pos. 1

Input Set : **A:\AR4951.txt**
Output Set: **N:\CRF3\03072002\J081126.raw**

L:11 M:270 C: Current Application Number differs, Replaced Current Application No
L:11 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:751 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:755 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:5
L:756 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:0
L:768 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:772 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:6
L:773 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:0
L:783 M:281 W: Numeric Fields not Ordered, <221> Sort in ascending order!
L:787 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:7
L:788 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:0